

## An Investigation of Magneto-Optical Effects

We exhibit the effects of Faraday rotation on the direction of the transverse component of the magnetic field in a simple, symmetric sunspot. A set of 35 polarization filtergrams of NOAA active region 4662 (June 9, 1985) were obtained with the Marshall Space Flight Center (MSFC) vector magnetograph. These filtergrams measured the Stokes I, Q, U, and V intensities averaged over the instrument's filter bandpass (0.0125 nm) for wavelengths from 0.017 nm in the red wing to 0.017 nm in the blue wing of the  $\lambda 525.22$  nm spectral line in steps of 0.001 nm. These data were used to derive the azimuth  $\phi$  of the vector field as a function of wavelength over the field of view of the sunspot. We interpret the observed variations of this azimuth with wavelength as the effects of Faraday rotation and verify this interpretation by comparing these variations with those predicted from magneto-optical theory. In the theoretical calculations we use the line-profile parameters and magnetic field strength derived in previous work by Balasubramaniam and West (*Astrophys. J.* **382**, p.699, 1991).